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BEFORE THE SURFACE TRANSPORTATION BOARD
395 E STREET, S.W.
WASHINGTON, D.C. 20423-0001

Railroad Cost Of Capital — 2006	STB Ex Parte No. 558 (Sub-No. 11)

COMMENTS OF THE PEOPLE OF THE STATE OF CALIFORNIA AND THE CALIFORNIA PUBLIC UTILITIES COMMISSION

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I. INTRODUCTION

On April 29, 2008, the Surface Transportation Board ("Board") of the United States Department of Transportation instituted a proceeding to determine the railroad industry's cost of capital for 2007. The Board solicited comments on (1) The railroads' 2007 current cost of debt capital; (2) the railroads' 2007 current cost of preferred stock equity capital (if any); (3) the railroads' 2007 cost of common stock equity capital; and (4) the 2007 capital structure mix of the railroad industry on a market value basis.

The California Public Utilities Commission ("Commission") regulates public utilities in the State of California and conducts its own cost of capital proceedings for the regulated utilities within the state. The Commission respectfully submits these comments concerning one aspect of the Board's review of Class 1 railroads' cost of capital proceeding, i.e., the Risk Premium and Risk Premium forecast in the Board's determination of the railroads' cost of capital.

II. BACKGROUND

In the Board's Railroad Cost of Capital—2006 proceeding, STB Ex Parte No. 558 (Sub-No. 10), the Board adopted the market-risk premium of 7.13% as reported by Ibbotson. (Decision at p. 6.) In the Board's January 17, 2008 Decision entitled "Methodology To Be Employed in Determining the Railroad Industry's Cost of Capital," STB Ex Parte No. 664, the Board replaced the Discounted Cash Flow ("DCF") model with the Capital Asset Pricing Model ("CAPM") methodology to determine the railroad industry's cost of capital.

III. THE PROBLEM WITH USING RISK PREMIUMS WITH CAPM METHODOLOGY

Combining CAPM methodology with a Risk or Equity Premium overestimates the railroad industry's growth potential by using expectations that are no longer realistic or accurate. Ibbotson's risk premium uses financial and economic data from 1926 to the present (e.g., 2006). The economic and financial conditions of the 20's, 30's, and 40's provide a questionable basis for predicting future returns. Moreover, Risk Premiums

generally are biased by using arithmetic instead of geometric mean returns.

The Commission supports the use of the CAPM methodology to determine the cost of equity capital for the nation's railroads. The CAPM methodology relies upon three parameters. the risk free rate, beta. and the equity risk premium. The Commission agrees with the estimates of beta and the risk free rate adopted by the Board. The adopted equity risk premium of 7.13 percent, however. is excessive. The Board should reduce the equity risk premium to levels consistent with the current expectations of the financial community. Consequently. Risk Premiums should be decreased significantly to reflect more accurate and reasonable (i.e., lower projections for stocks and higher projections for bonds) growth predictions.

IV. DISCUSSION

Many modern economists view the historical or annual market return studies, often resulting in equity risk premiums of 7.1%, as overstated.[1] Historical equity risk premiums are based on past market conditions which vary significantly from those of the present and. consequently, do not provide a realistic barometer of expectations of future market conditions. Historical returns for stocks and bonds are subject to a myriad of empirical biases which prevent them from accurately reflecting future returns. Historical returns ignore current market conditions and actually mask more recent changes in the relationship of stocks and bonds. Historic bond returns are biased downward as a measure of expectancy because of capital losses suffered by bondholders in the past. Thus, calculating risk premiums using this methodology has an inherent upward bias.

The equity risk premium based on *Stocks, Bonds, Bills, and Inflation* (SBBI) published by Ibbotson Associates (and now Morningstar) is the difference between the arithmetic average stock return and the bond income (coupon return) return over the 1926-2006 period. However, using the arithmetic mean overstates the actual return

[1] See: The Biggest Mistakes We Teach," Jay R. Ritter, *Journal of Financial Research*, June 22, 2002 http://www.allbusiness.com/personal-finance/investing-stock-investments/216617-1.html

experienced by investors. In "Risk and Return on Equity: The Use and Misuse of Historical Estimates," Carleton and Lakonishok note, "The geometric mean measures the changes in wealth over more than one period on a buy and hold (with dividends invested) strategy."[2] Since the Ibbotson data covers more than one period, proper calculation requires use of the geometric mean and not the arithmetic mean.

In the Commission's cost of capital proceeding, A.07-05-003 et al., pp. 5-16 to 5-17, J. Randall Woolridge, Professor of Finance and the Goldman, Sachs & Co. and a Frank P. Smeal Endowed Faculty Fellow in Business Administration in the College of Business Administration of the Pennsylvania State University in University Park, Pennsylvania, testified that,

> To demonstrate the upward bias of the arithmetic mean, consider the following example. Assume that you have a stock (that pays no dividend) that is selling for $100 today, increases to $200 in one year, and then falls back to $100 in two years.
>
> **Arithmetic vs. Geometric Mean**
>
Time Period	Stock Price	Annual Return
0	$100	
1	$200	100%
2	$100	-50%
>
> The arithmetic mean return is simply (100% + (-50%))/2 = 25% per year. The geometric mean return is ((2 * .50)(1/2)) – 1 = 0% per year. Therefore, the arithmetic mean return suggests that your stock has appreciated at an annual rate of 25%, while the geometric mean return indicates an annual return of 0%. Since after two years, your stock is still only worth $100, the geometric mean return is the appropriate return measure. For this reason, when stock returns and earnings growth rates are reported in the financial press, they are generally reported using the geometric mean. This is because of the upward bias of the arithmetic mean. Therefore, the arithmetic mean

[2] Willard T Carleton and Josef Lakonishok, "Risk and Return on Equity The Use and Misuse of Historical Estimates," *Financial Analysts Journal* (January-February, 1985), pp 38-47

> return measures are biased and should be disregarded. As further evidence of the appropriate mean return measure, the U.S. Securities and Exchange Commission requires mutual funds to report historic return performance using geometric mean and not arithmetic mean returns.[3]

Professor Woolridge concluded his testimony at the Commission with the statement,

> The net effect of the change in risk and return has been a significant decrease in the return premium that stock investors require over bond yields. In short, the market risk premium had declined in recent years. This decline has been discovered in studies by leading academic scholars and investment firms, and has been acknowledged by government regulators. As such, **using a historic equity risk premium analysis is simply outdated and not reflective of current investor expectations and investment fundamentals** [emphasis added].
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> Id. at pp. 5-19 to 5-20.

Finally, Jay R. Ritter, Cordell Professor of Finance at the University of Florida, contends that,

> The Ibbotson numbers show that the historical real return on bonds has been about 1%. But today, TIPS [Treasury Inflation-Indexed Bonds] are yielding real returns of about 3.3%. If the expected real return on equities is 4% and the real return on inflation-indexed bonds is 3.3%, **the equity risk premium is only 0.7%. In round numbers, 1%.** The equity premium has gotten squeezed from the top (low future real returns on stocks) and the bottom (a higher real return on bonds) [emphasis added].
>
> (See note 1, supra.)

V. CONCLUSION

The Commission supports the Board's adoption of the CAPM methodology to determine the cost of equity capital for the nation's railroads. The Commission agrees with and accepts the Board's estimates of beta and the risk free rate adopted in the Decision. However, the adopted equity risk premium of 7.13 percent is clearly excessive. The Commission respectfully recommends that the Board reduce its equity

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[3] U.S Securities and Exchange Commission, Form N-1A

risk premium to levels more consistent with current (i.e., more realistic) financial expectations.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document entitled COMMENTS OF THE PEOPLE OF THE STATE OF CALIFORNIA AND THE PUBLIC UTILITIES COMMISSION in STB Ex Parte No. 558 (Sub-No. 11), upon the Surface Transportation Board in this proceeding by electronically forwarding the document in Microsoft WORD and PDF filling out and submitting the Document Submission Form to the STB's electronic docket site (Regulations.gov) at: http://www.regulations.gov .

Dated at San Francisco, California, this 23rd day of June, 2008.

/s/ CHARLENE D. LUNDY

Charlene D. Lundy